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Vertebrate Natural History Notes from Arkansas, 2019

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Vertebrate Natural History Notes from Arkansas, 2019

Cover Page Footnote

The Arkansas Game and Fish Commission (AGFC) issued Scientific Collecting Permits to RT, HWR, MBC, and CTM. Our most sincere thanks to Dwight Ferguson, Black Rock, AR, for allowing use of his sturgeon collection and for providing photos of the Lake Sturgeon. Thanks also to AGFC biologists Jeff Quinn and Allison Asher for first alerting HWR about the collection of the sturgeon specimen. Appreciation is expressed to Ken Shirley, former AGFC fishery biologist, for reviewing the information on several of the fishes reported herein. Observations about the gynandromorphic cardinal were provided by Ed Laster. Robbie Morphew provided information and the specimen of the mudpuppy. We thank Dale Paulson and David Saugey for information about the Hoary Bat, and Ron Redman for the remaining records of bats. Lance Durden (Georgia Southern University) provided ectoparasite identification and curation. CTM thanks Nikolas H. McAllister (Lukfata Elementary, Broken Bow, OK) and James T. McAllister, III (University of Arkansas-Fayetteville), for assistance in collecting fish. The USDA Ouachita National Forest issued a Scientific Collecting Permit to CTM to collect at the Charlton Recreation Area. CTM also thanks Dr. Dennis Richardson (Quinnipiac University, Hamden, CT) for use of the electrofisher.

Authors

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Vertebrate Natural History Notes from Arkansas, 2019

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Abstract

Important observations of natural history often go unreported because they are not part of larger studies, but small details can provide insights that lead to interesting questions about ecological relationships or environmental change. We have compiled recent important observations of distribution, deformities, foods, parasites, and reproduction of various vertebrates. Included are a new record of Lake Sturgeon (*Acipenser fulvescens*), a new size record of mudpuppy (*Necturus louisianensis*), and a second observation of bilateral gynandromorphism in a Northern Cardinal (*Cardinalis cardinalis*).

Introduction

Vertebrate field biologists constantly observe natural history parameters and relationships among organisms in human-altered environments. Introduction of non-native species may confound relationships and understanding of life history parameters of native species. Knowledge of distribution and natural history of many species within Arkansas is becoming better documented, but much remains to be discovered and reported. We continue to update the state of knowledge of Arkansas's vertebrates (see Tumlison *et al.* 2017 and references therein). Here, we include previously unreported records of distribution, food habits, parasitism and disease, size, and reproduction in vertebrates from Arkansas.

Methods

Fishes were collected with 3.1×1.4 m, 3.1×1.8 m, and 6.1×1.8 m seines (all 3.175 mm mesh), or with a backpack electrofisher. Fish specimens were

documented either by a photovoucher or a specimen housed in the vertebrate collections at Henderson State University (HSU), Arkadelphia, AR. Voucher specimens of fishes or herps were fixed in 10% formalin and preserved in 50% isopropanol. Measurements such as total length (TL) not originally taken in metric units are reported first in English, as initially recorded. Bat records were based on catch/release surveys by expert chiropterologists, or from specimens sent to the Arkansas Department of Health and identified by D. Saugey.

Trematodes were fixed in nearly boiling tap water without coverslip pressure, stained in acetocarmine, cleared in methyl salicylate, and mounted in Canada balsam. Tissues from one fish were processed by standard histological methods following Presnell and Schreibman (1997) with sectioning at 8-10 μ m followed by staining with hematoxylin and eosin. Vouchers (photovouchers or slides) of parasites were deposited in the Harold W. Manter Laboratory of Parasitology, University of Nebraska, Lincoln, NE.

Results and Discussion

CLASS PETROMYZONTIDA

Petromyzontidae - Lampreys

Ichthyomyzon castaneus Girard – Chestnut Lamprey. A single adult (20 cm TL) was collected on the White River near Three Chutes Rapid (36.342935°N, 92.528952°W) on the border of Marion and Baxter Cos. on 13 February 2019 by J. Pyle. This individual was attached to the head of a Brown Trout (*Salmo trutta*; Fig. 1). This lamprey has been collected previously from the White River (Robison *et al.* 2006; Salinger *et al.* 2018); however, this is the northernmost record from the White River below Bull Shoals Dam. Furthermore, Salinger *et al.* (2018) reported this species

parasitizing Rainbow Trout (*Oncorhynchus mykiss*) in Arkansas, but ours may be the first report from Brown Trout.

Figure 1. Wound on the head of a Brown Trout (*Salmo trutta*) caused by a parasitic Chestnut Lamprey (*Ichthyomyzon castaneus*, inset of lamprey mouth) collected from the White River, Marion/Baxter cos. on 13 February 2019. Photo by Jon Pyle.

CLASS ACTINOPTERYGII

Acipenseridae – Sturgeon

***Acipenser fulvescens* Rafinesque – Lake Sturgeon.** The Lake Sturgeon is a rare fish in Arkansas and only occasionally is caught by commercial fishermen in the larger rivers of the state. Robison and Buchanan (1988) reported only 3 records of this sturgeon in Arkansas. Buchanan *et al.* (1993) added 2 localities, 1 each in Desha and Prairie Cos. Later, Crump and Robison (2000) reported an historical record from the Caddo River in Pike County.

On 16 January 2019, Dwight Ferguson, a commercial fisherman from Black Rock, caught, photovouchered, and released a 3 ft. (1 m) long Lake Sturgeon (*Acipenser fulvescens*; Fig. 2) in a hoop net in the Black River near Powhatan, Independence Co., AR (36.067080°N, 91.117798°W) in about 8-10 ft. (2.4-3.0 m) of water. Mr. Ferguson (*pers. comm.*) said the Black River was fairly low at the time of the capture. The discovery of this specimen, small for the species, attests to the continued presence of this rare fish in Arkansas.

Figure 2. Lake Sturgeon (*Acipenser fulvescens*) captured from the Black River, Independence Co., on 16 January 2019. Photovoucher by Dwight Ferguson.

Anguillidae – Eels

***Anguilla rostrata* Lesueur – American Eel.** This interesting fish species is an uncommon inhabitant of Arkansas streams and rivers (Robison and Buchanan 1988). A single specimen of this species was caught on a trotline baited with sunfish in the Jimmy Creek arm of Bull Shoals Lake, Marion Co., AR on 25 June 2018 by Wilson Bowling. The fish weighed 5 lb., 5 oz. (2.4 kg), and was 40.5 in. (1.03 m) in TL. Mr. Bowling, Postmaster in Bull Shoals, caught the eel and weighed it on his certified postal scale in front of an AGFC biologist prior to Cody Wyatt, AGFC biologist, weighing it on the official scale at the AGFC office. The eel was 1 oz. over the current state record (<https://www.agfc.com/en/fishing/state-records/>) and is a new Arkansas state size record for the American Eel.

Cyprinidae – Minnows and Carps

***Cyprinella galactura* (Cope) – Whitetail Shiner.** A gravid female (112 mm TL) specimen was collected on 29 May 2018 by CTM at Crooked Creek in Yellville, Marion Co. (36.223053°N, 92.689181°W). Pflieger

(1997) reported this shiner to spawn from early June to mid-August in Missouri. Robison and Buchanan (1988) noted that breeding males are found in early July in northern Arkansas. Our observations indicate a slightly earlier onset of reproduction than was previously known in Arkansas.

***Luxilus chrysocephalus* Rafinesque – Striped Shiner.** A 92 mm TL male specimen collected by CTM on 21 December 2018 from Big Fork Creek off St. Hwy 8, Polk Co. (34.468100°N, 93.947686°W) exhibited bilateral exophthalmos, also known as bulging eyes or pop-eye (Fig. 3:A-B). This is the first time, to our knowledge, that this condition has been reported in *L. chrysocephalus isolepis* or any Arkansas fish. Hargus (1991) reported that exophthalmos is a common condition in finfish. He suggested that poor water quality, including gas imbalances and parasitemias may cause exophthalmos; immunological deficiencies and genetic factors are also involved. This fish did not harbor eye parasites (*Diplostomum*) and was not collected from visibly poor water quality. The fish did, however, have a buildup of clear, watery tissue fluid under the eye from an unknown pathology which likely caused the pop-eye condition.

Another *L. c. isolepis* (female, 107 mm TL) collected from the site was found to have lordosis (Fig. 3C). Lordosis is defined as an abnormal ventral curvature of the vertebral column, accompanied by abnormal calcification of the affected vertebrae (Kranenbarg *et al.* 2005). This is the second time an abnormal vertebral condition (scoliosis) has been reported in a Striped Shiner from this locality (Tumlison *et al.* 2018).

Figure 3. Eye and skeletal anomalies in 2 *Luxilus chrysocephalus isolepis*. A-B: Individual exhibiting bilateral exophthalmos, scale bar A = 10 mm, scale bar B = 5 mm. C: specimen with lordosis (arrow), scale bar = 20 mm. Photos by CTM.

Catostomidae – Suckers

***Hypentelium nigricans* (Lesueur) – Northern Hogsucker.** A 305 mm TL individual was collected on 19 November 2018 by CTM from Walnut Creek off US Hwy 270 at Charlton Recreation Area, Garland Co. (36.223052°N, 92.689180°W). This female contained a large complement of yolked ova in 2 egg sacs (Fig. 4). In Arkansas, *H. nigricans* has been reported to breed in April and May (Robison and Buchanan 1988). We document that eggs may be well into development as early as November.

Figure 4. Female *Hypentelium nigricans* with yolked ova (OV) in 2 egg sacs. Note the central position of the swim bladder (SB). Photo by CTM.

Ictaluridae – Bullhead Catfishes

***Ameiurus melas* (Lesueur) – Black Bullhead.** Two adult (132, 203 mm TL) individuals were collected by CTM on 24 March 2018 from the White River, SE of Elkins off Co. road 49, Washington Co. (35.973855°N, 93.984183°W). The smaller one had a massive infection of the yellow grub trematode (*Clinostomum marginatum*) on the base of every fin (except adipose) and the right eye (Fig. 5:A-F). Yellow grub has been reported previously in *A. melas* (GenBank MF38191) from Benton Co. (McAllister *et al.* 2018), and a large number of *C. marginatum* (500) were reported from a Brown Bullhead (*A. nebulosus*) in Pennsylvania (Torres and Price 1971). In addition, hyperinfections of *C. marginatum* have been reported in both Smallmouth (*Micropterus dolomieu*) and Largemouth Bass (*M. salmoides*), in Arkansas (Daly *et al.* 1991). The present hyperinfection is noteworthy because there are no published reports of such an intense infection in this relatively small host with complementary photomicrographs.

Figure 5:A-F. Hyperinfection of *Clinostomum marginatum* in Black Bullhead, *Ameiurus melas*. A. Encapsulated specimens in pelvic fins (arrows). Scale bar = 1.0 mm. B. Close-up of specimens in pectoral fin (arrows). Scale bar = 1.0 mm. C. Specimens encapsulated near left eye (arrow). Scale bar = 1.0 mm. D. Group of encapsulated specimens in anal fin (arrows). Scale bar = 1.0 mm. E. Photomicrograph of 5 specimens (*). Scale bar = 500 μ m. F. Higher magnification of a single specimen showing host-derived capsule (arrow). Scale bar = 250 μ m. Photos A-D by CTM, photos E-F by Stanley E. Trauth.

Centrarchidae – Sunfishes

***Ambloplites constellatus* Cashner and Suttkus – Ozark Bass.** A 165 mm TL specimen collected on 27 May 2018 from Crooked Creek, Yellville, Marion Co. (36.223053°N, 92.689181°W) contained 2 *Lebertia* sp. (Acari: Hydrachnida: Lebertiidae) water mites in its stomach. We know of no previous reports of water mites consumed by this fish.

***Lepomis megalotis* (Rafinesque) – Longear.** This sunfish is common throughout Arkansas (Robison and Buchanan 1988). A single specimen was collected by Paul Port on 23 June 2018, while spearfishing in Bull Shoals Lake (36.408194°N, 92.623972°W), Marion Co. This very large specimen was 8.75 in. (22.2 cm) in TL and weighed 9 oz. (0.255 kg). This fish was weighed on a digital hanging scale and TL was taken with a tape measure. Robison and Buchanan (1988) noted a maximum length for Longear at 7 in. (17.7 cm). The current official Arkansas state record weight for Longear is 1 lb., 2 oz. (0.51 kg), taken from Table Rock Lake on 22 April 1991; however, Ken Shirley (*pers.*

comm.), retired fishery biologist for the Mountain Home District, commented that the current state record holder was actually a Redear Sunfish (*Lepomis microlophus*) and not a Longear, as some past AGFC fish records were certified by non-biologists (Wildlife Officers) that may have misidentified some fish. This Longear specimen from Bull Shoals is noteworthy because of its large size, both in length and weight.

Percidae – Perches

***Etheostoma collettei* Birdsong and Knapp – Creole Darter.** A 50 mm SVL female *E. collettei* collected 15 March 2018 from Ten Mile Creek at Lonsdale, Saline Co. (34.545274°N, 92.753888°W) contained 7 water mites in its stomach, including 2 *Lebertia*, 2 *Hygrobatas*, 1 *Atractides*, and 2 *Woolastookia*. Tumilson *et al.* (2017) previously reported unidentified water mites from 2 *E. collettei* from this locality. It appears this darter may commonly ingest this food item at this specific locality in the state.

CLASS AMPHIBIA

Proteidae – Mudpuppies

***Necturus louisianensis* Viosca – Red River Mudpuppy.** Debate continues about whether this form is a subspecies (*N. maculosus louisianensis*) or a full species. In either case, it is the only form found in Arkansas. This large aquatic salamander occurs statewide in permanent water situations (Trauth *et al.* 2004). Specimens usually range between 180-230 mm in TL, and the record size recorded was 307 mm (Powell *et al.* 2016).

A large adult female specimen was captured from DeGray Lake in the Arlie Moore/ Oak Bower area, Hot Spring Co., on 11 February 2019. The fisherman, Robbie Morphew, was fishing with shiners as bait, by use of hook and line attached to floating noodles, in water about 1.5 m (5 ft.) in depth. The fresh specimen was 309 mm TL, and 207 mm snout-vent length (SVL). This individual (HSU1980) represents a new maximum length for Arkansas, and for the species (or subspecies).

CLASS AVES

Cardinalidae – Cardinals

***Cardinalis cardinalis* (Linnaeus) – Northern Cardinal.** Male Northern cardinals usually present bright red coloration whereas the female shows tinges of red but most of the body is drab. Very rarely, a condition known as bilateral gynandromorphism appears, where male coloration presents on one side of the body and female coloration on the other (Major and Smith 2016).

The first bilateral gynandromorph cardinal known to have been spotted in Arkansas was photographed near Roland in Pulaski Co. on 11 February 2018 (Tumilson *et al.* 2018). A bilateral gynandromorph cardinal was photographed 9 months later by Ed Laster on 7 November 2018, in Little Rock, Pulaski Co. (34.8063°N, 92.4895°W). The Roland cardinal was 15.3 km (9.5 mi.) NNE of this new observation. From the photograph (Fig. 6), it could not be determined with certainty whether this was the same bird. Both birds appeared to be male on the right side. The New York Times recently reported a similar bird from Pennsylvania (<https://www.nytimes.com/2019/02/09/science/cardinal-sex-gender.html>).

Figure 6. Image of bilateral gynandromorph Northern Cardinal (*Cardinalis cardinalis*) taken in Pulaski County, 7 November 2018. Note the lighter female coloration on the left side and the dark red male coloration on the right side of the bird. Photo by Ed Laster.

CLASS MAMMALIA

ORDER EULIPOTYPHILA

Soricidae - Shrews

***Cryptotis parva* (Say) – Least Shrew.** An adult *Cryptotis parva* collected on 24 October 2018 on the campus of Northwest Arkansas Community College, Bentonville, Benton Co., was infested with 2 female *Leptinus americanus* beetles. *Leptinus americanus* has been reported previously from the Southern Short-tailed Shrew (*Blarina carolinensis*) and the Eastern Mole (*Scalopus aquaticus*) from Arkansas (Connior *et al.* 2014). *Cryptotis parva* is a new host record for this beetle. An adult *C. parva* collected at the same location on 2 October 2018 was infested with 3 female *Corrodopsylla hamiltoni*. This is only the second report of this flea in Arkansas, both occurring in the northwestern corner of the state (McAllister *et al.* 2017).

ORDER CHIROPTERA

Vespertilionidae – Vesper Bats

***Lasiurus cinereus* (Palisot de Beauvois) – Hoary Bat.** A rabid female Hoary Bat collected on 11 September 2018 from Siloam Springs, Benton Co.,

represents a new county record for Arkansas (Perry *et al.* 2018).

***Lasiurus seminolus* (Rhoads) – Seminole Bat.**

Two new county records for the Seminole Bat have been obtained. On 11 August 2017, a Seminole bat was captured in a mist net in S30, T14S, R4W, on the Cut-Off Creek WMA in Drew Co. On 24 July 2018, an adult male Seminole Bat was captured in a mist net set over a road in S6, T14S, R25W, Hempstead Co. On the same night, a post-lactating adult female Seminole Bat was captured in a mist net set over a road in S21, T13S, R25W, on the Dr. Lester Sitzes III Bois D'Arc WMA. This observation may support other evidence of reproduction in Arkansas, as a newly volant juvenile Seminole Bat was captured on 26 July 2001 (Tumilson *et al.* 2002).

***Myotis austroriparius* (Rhoads) – Southeastern**

Myotis. On 18 August 2018, an adult male Southeastern Bat was captured in a mist net set on a trail in S6, T6S, R5W, on the George H. Dunklin Bayou Metro WMA. This is a new county record for Jefferson Co. (Perry *et al.* 2018).

***Eptesicus fuscus* (Palisot de Beauvois) – Big**

Brown Bat. On 8 August 2017, a post-lactating adult female Big Brown Bat was captured in a mist net set over a road in S3, T12N, R6E, on the St. Francis Sunken Lands WMA. This is a new county record for Poinsett Co., that helps fill a void of records in eastern Arkansas (Perry *et al.* 2018).

Mollossidae – Freetailed Bats

***Tadarida brasiliensis* (L. Geoffroy) – Brazilian**

Free-tailed Bat. An adult male Brazilian Free-tailed Bat captured 16 August 2018 in a mist net set over a stream in S7, T5S, R6W, on the George H. Dunklin Bayou Metro WMA, is a new record for Arkansas Co., and the easternmost record in Arkansas (Perry *et al.* 2018).

ORDER RODENTIA

Sciuridae – Squirrels

***Sciurus carolinensis* Gmelin – Gray Squirrel.**

Larvae of bot flies (*Cuterebra* sp.) cause myiasis in the animals they infest, and near maturity appear as large, darkened maggots visible through a hole in the skin of the host. Though bot flies are commonly reported as infesting gray squirrels, limited information has been reported in squirrels in Arkansas. On 14 July 2018, a single adult gray squirrel was collected near Mull in Marion Co., that contained a 3rd instar larvae of *Cuterebra emascuator* located on the abdomen near the right rear leg (Fig. 7). Although this botfly is rather

common in squirrels, most of the records occur east of the Mississippi River (Sabrosky 1986). Skvarla *et al.* (2016) reported a single adult *C. emasculator* collected along the Buffalo National River in Newton County during a trapping survey. This is the first report of this species infesting a gray squirrel in Arkansas.

Figure 7. Botfly (*Cuterebra emasculator*) in a gray squirrel collected from Mull, Marion Co., on 14 July 2018. Photo by MBC.

***Sciurus niger* Linnaeus – Fox Squirrel.** On 6 March 2016, a single adult melanistic fox squirrel was seen by MBC at Tanyard Springs, Bella Vista, Benton Co. Though melanistic fox squirrels are not uncommon, they are seen most in the southeastern United States, and Benton County is the most extreme northwestern county in Arkansas from which they have been observed (Kiltie 1989).

***Glaucomus volans* (Linnaeus) – Southern Flying Squirrel.** Flying squirrels were recently discovered to fluoresce under ultraviolet (UV) light (Kohler *et al.* 2019). The study examined *G. volans* from several localities, but the closest specimen to Arkansas was from Tennessee, and no specimens were examined from the southwestern area of the species range in the United States (Arkansas, Louisiana, Mississippi, Missouri, Oklahoma, Texas). We examined 18 specimens (HSU 77-80, 82-87, 164, 173, 177, 178, 180, 185, 201, 457) from Clark and Pike Cos. in southwestern Arkansas under UV light, and 16 of them fluoresced to some degree with a pink coloration (Fig. 8).

Acknowledgments

The Arkansas Game and Fish Commission (AGFC) issued Scientific Collecting Permits to RT, HWR, MBC, and CTM. Dwight Ferguson, Black Rock, AR, provided information and photos of the Lake Sturgeon. AGFC biologists Jeff Quinn and Allison Asher alerted HWR

Figure 8. Fluorescence in a Flying Squirrel from Clark Co., SW Arkansas. Under white light, the ventral hairs were white to tannish (left), but under UV light (right) about half of the pelage glowed pinkish. Photo by RT.

about the sturgeon specimen. Ken Shirley, former AGFC fishery biologist, reviewed information on several fishes reported herein. Ed Laster provided observations about the gynandromorphic cardinal. Robbie Morphey provided information and the specimen of the mudpuppy. Dale Paulson and David Saugey provided information about the Hoary Bat, and Blake Sasse forwarded the remaining records of bats. Lance Durden (Georgia Southern University) identified and curated ectoparasites. CTM thanks Nikolas H. McAllister (Lukfata Elementary, Broken Bow, OK) and James T. McAllister, III (University of Arkansas-Fayetteville), for assistance in collecting fish.

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